

NCR: Yes / No

WORK ORDER NON-CONFORMANCE / UPDATE

DQA: John Date: 2013/02/01
QA Closed: CK Date: 11

Work Order: <u>89525</u>	DISPOSITION Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input checked="" type="checkbox"/> Work Order Update <input type="checkbox"/>	AGAINST DEPARTMENT/PROCESS			
Part No. <u>D4640-15</u>		Skid-tube <input type="checkbox"/>	Crosstube <input type="checkbox"/>	Water Jet <input type="checkbox"/>	Engineering <input checked="" type="checkbox"/>
NCR No. <u>13-2274</u>		Machining <input type="checkbox"/>	Small Fab <input type="checkbox"/>	Prod. Eng. Coord. <input type="checkbox"/>	Quality <input type="checkbox"/>
		Thermoforming <input type="checkbox"/>	Finishing <input type="checkbox"/>	Rec/Store/Packaging <input type="checkbox"/>	Other <input type="checkbox"/>
		Large Fab <input type="checkbox"/>	Composite <input type="checkbox"/>	Supplier <input type="checkbox"/>	

Root Cause	Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Doc/Data									
Equip/Tooling									
Operator	13/1/18	100	10	PART DIDN'T MATCH TEMPLATE, PROBLEM WITH PROGRAM	DAS 12 2-89	Acceptable.	DAS 12 2-89		
Material						REF attached email	13/1/18	DAS 16 2-89	DAS 16 2-89
Setup								13/1/25	13/1/25
Other	X								
Process									
Supplier									
Training									
Unapproved									

FAULT CATEGORY

Landing Gear <input type="checkbox"/> Bending <input type="checkbox"/> Centre Not Concentric to O/S <input type="checkbox"/> Cracks <input type="checkbox"/> Crushed/Crimped <input type="checkbox"/> Cuffs <input type="checkbox"/> Heat Treat <input type="checkbox"/> Inspection Strip in Tube <input type="checkbox"/> Ripples in Bend <input type="checkbox"/> Torque Waves in Extrusion <input type="checkbox"/> Turning Sequence <input type="checkbox"/> Wave/Twist in Tube	General <input type="checkbox"/> Bend <input type="checkbox"/> BOM/Route <input type="checkbox"/> Broken/Damaged <input type="checkbox"/> Burrs <input type="checkbox"/> Contamination <input type="checkbox"/> Countersink <input type="checkbox"/> Cut Too Short <input type="checkbox"/> Drill Holes <input type="checkbox"/> Drawing <input type="checkbox"/> Finish <input type="checkbox"/> Folio	<input type="checkbox"/> Grain <input type="checkbox"/> Hardware <input type="checkbox"/> Inspection Incomplete <input type="checkbox"/> Instructions Incomplete/Unclear <input type="checkbox"/> Maintenance <input type="checkbox"/> Mislabeled <input type="checkbox"/> Misread <input type="checkbox"/> Offset <input type="checkbox"/> Out of Calibration <input type="checkbox"/> Out of Sequence <input type="checkbox"/> Outside Dimensions	<input type="checkbox"/> Ovalized <input type="checkbox"/> Over/Under tolerance <input type="checkbox"/> Part Incorrect <input type="checkbox"/> Part Lost/Missing <input type="checkbox"/> Part Moved <input type="checkbox"/> Positioned Wrong <input type="checkbox"/> Power Loss/Surge <input checked="" type="checkbox"/> Other <u>Problem with transes to</u> <u>APK -> water jet</u>	<input type="checkbox"/> Pressure/Forced <input type="checkbox"/> Temperature/Cure <input type="checkbox"/> Weld <input type="checkbox"/> Wrong Stock Pulled
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Work Order ID 89524

89524

Page 2

August-24-12 9:49:58 AM

Item ID: D4640-15 Accept *N900040100* Setup Start *NS1*
 Revision ID: Stop *NS2*
 Item Name: Ceiling Protector
 Start Date: 8/24/12 Start Qty: 10.00 *10* Cust Item ID:
 Required Date: 11/05/12 Req'd Qty: 10.00 *10* Customer:
 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start *NR1*
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
120 *120* QC Quality Control	QC8- Inspect parts - second check Memo Use template to mark locations	0.00 0.00				10			
130 *130* Packaging Packaging	Identify as per dwg & Stock Location: PKG Memo	0.00 0.00					13/1/12		DAS 06 9-89
140 *140* QC Quality Control	QC21- Final Inspection - Work Order Release Memo	0.00 0.00							13-01-25 MF 13-1-25

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Root Cause	Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector			
Doc/Data <input type="checkbox"/>												
Equip/Tooling <input type="checkbox"/>												
Operator <input type="checkbox"/>												
Material <input type="checkbox"/>												
Setup <input type="checkbox"/>												
Other <input type="checkbox"/>												
Process <input type="checkbox"/>												
Supplier <input type="checkbox"/>												
Training <input type="checkbox"/>												
Unapproved <input type="checkbox"/>												
FAULT CATEGORY												
Landing Gear <input type="checkbox"/> Bending <input type="checkbox"/> Centre Not Concentric to O/S <input type="checkbox"/> Cracks <input type="checkbox"/> Crushed/Crimped <input type="checkbox"/> Cuffs <input type="checkbox"/> Heat Treat <input type="checkbox"/> Inspection Strip in Tube <input type="checkbox"/> Ripples in Bend <input type="checkbox"/> Torque Waves in Extrusion <input type="checkbox"/> Turning Sequence <input type="checkbox"/> Wave/Twist in Tube			General <input type="checkbox"/> Bend <input type="checkbox"/> BOM/Route <input type="checkbox"/> Broken/Damaged <input type="checkbox"/> Burrs <input type="checkbox"/> Contamination <input type="checkbox"/> Countersink <input type="checkbox"/> Cut Too Short <input type="checkbox"/> Drill Holes <input type="checkbox"/> Drawing <input type="checkbox"/> Finish <input type="checkbox"/> Folio			<input type="checkbox"/> Grain <input type="checkbox"/> Hardware <input type="checkbox"/> Inspection Incomplete <input type="checkbox"/> Instructions Incomplete/Unclear <input type="checkbox"/> Maintenance <input type="checkbox"/> Mislabeled <input type="checkbox"/> Misread <input type="checkbox"/> Offset <input type="checkbox"/> Out of Calibration <input type="checkbox"/> Out of Sequence <input type="checkbox"/> Outside Dimensions			<input type="checkbox"/> Ovalized <input type="checkbox"/> Over/Under tolerance <input type="checkbox"/> Part Incorrect <input type="checkbox"/> Part Lost/Missing <input type="checkbox"/> Part Moved <input type="checkbox"/> Positioned Wrong <input type="checkbox"/> Power Loss/Surge		<input type="checkbox"/> Pressure/Forced <input type="checkbox"/> Temperature/Cure <input type="checkbox"/> Weld <input type="checkbox"/> Wrong Stock Pulled <input type="checkbox"/> Other	

Picklist Print

August-24-12 9:49:57 AM

Page 1

Work Order ID: 89524

Parent Item: D4640-15

Parent Item Name: Ceiling Protector

Start Date: 8/24/12

Required Date: 11/05/12

Start Qty: 10.00

Required Qty: 10.00

Comments: IPP REV:A 12.05.08 NEW ISSUE DD VERF:EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
MLEXS.093-F6006-07 GE PLASTICS LEXAN SHEET		Purchased	No			100	sf	1,452.6700	12.6	132.63158 160			

Jm 13-1-16

Location

Loc Qty

Loc Code

therm

1452.67

112176

40.44

114459

1412.23

123105

123105

NCR: Yes / No

WORK ORDER NON-CONFORMANCE / UPDATE

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Work Order: _____ Part No. _____ NCR No. _____				DISPOSITION Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input type="checkbox"/> Work Order Update <input type="checkbox"/>		AGAINST DEPARTMENT/PROCESS <div style="display: flex; justify-content: space-between;"> <div> Skid-tube <input type="checkbox"/> Machining <input type="checkbox"/> Thermoforming <input type="checkbox"/> Large Fab <input type="checkbox"/> </div> <div> Crosstube <input type="checkbox"/> Small Fab <input type="checkbox"/> Finishing <input type="checkbox"/> Composite <input type="checkbox"/> </div> <div> Water Jet <input type="checkbox"/> Prod. Eng. Coord. <input type="checkbox"/> Rec/Store/Packaging <input type="checkbox"/> Supplier <input type="checkbox"/> </div> <div> Engineering <input type="checkbox"/> Quality <input type="checkbox"/> Other <input type="checkbox"/> </div> </div>					
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Equip/Tooling <input type="checkbox"/>											
Operator <input type="checkbox"/>											
Material <input type="checkbox"/>											
Setup <input type="checkbox"/>											
Other <input type="checkbox"/>											
Process <input type="checkbox"/>											
Supplier <input type="checkbox"/>											
Training <input type="checkbox"/>											
Unapproved <input type="checkbox"/>											

FAULT CATEGORY									
Landing Gear			General						
<input type="checkbox"/> Bending	<input type="checkbox"/> Bend	<input type="checkbox"/> Grain	<input type="checkbox"/> Ovalized	<input type="checkbox"/> Pressure/Forced					
<input type="checkbox"/> Centre Not Concentric to O/S	<input type="checkbox"/> BOM/Route	<input type="checkbox"/> Hardware	<input type="checkbox"/> Over/Under tolerance	<input type="checkbox"/> Temperature/Cure					
<input type="checkbox"/> Cracks	<input type="checkbox"/> Broken/Damaged	<input type="checkbox"/> Inspection Incomplete	<input type="checkbox"/> Part Incorrect	<input type="checkbox"/> Weld					
<input type="checkbox"/> Crushed/Crimped	<input type="checkbox"/> Burrs	<input type="checkbox"/> Instructions Incomplete/Unclear	<input type="checkbox"/> Part Lost/Missing	<input type="checkbox"/> Wrong Stock Pulled					
<input type="checkbox"/> Cuffs	<input type="checkbox"/> Contamination	<input type="checkbox"/> Maintenance	<input type="checkbox"/> Part Moved						
<input type="checkbox"/> Heat Treat	<input type="checkbox"/> Countersink	<input type="checkbox"/> Mislabeled	<input type="checkbox"/> Positioned Wrong						
<input type="checkbox"/> Inspection Strip in Tube	<input type="checkbox"/> Cut Too Short	<input type="checkbox"/> Misread	<input type="checkbox"/> Power Loss/Surge	<input type="checkbox"/> Other					
<input type="checkbox"/> Ripples in Bend	<input type="checkbox"/> Drill Holes	<input type="checkbox"/> Offset							
<input type="checkbox"/> Torque Waves in Extrusion	<input type="checkbox"/> Drawing	<input type="checkbox"/> Out of Calibration							
<input type="checkbox"/> Turning Sequence	<input type="checkbox"/> Finish	<input type="checkbox"/> Out of Sequence							
<input type="checkbox"/> Wave/Twist in Tube	<input type="checkbox"/> Folio	<input type="checkbox"/> Outside Dimensions							

DART AEROSPACE LTD		Work Order: 89524
Description: Ceiling Protector		Part Number: D4640-15
Inspection Dwg: D4640	Rev: 1 C	Page 1 of 1

FIRST ARTICLE INSPECTION CHECKLIST

Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
18.80	+/-0.030	18.80"	-		T	Jkmo6
22.03	+/-0.030	22.03"	-		T	
20.06	+/-0.030	20.06"	-		T	
13.06	+/-0.030	13.06"	-		T	
3.60	+/-0.030	3.60"	-		V	Jkmo1
8.09	+/-0.030	8.09"	-		V	Product 2
20.86	+/-0.030	20.86"	-		T	
3.11	+/-0.030	3.11"	-		V	
7.27	+/-0.030	7.27"	-		V	
5.10	+/-0.030	5.10"	-		V	
4.85	+/-0.030	4.85"	-		V	
13.06	+/-0.030	13.06"	-		T	
1.50	+/-0.030	1.50"	-		V	
5.00	+/-0.030	5.00"	-		V	
57.46	+/-0.030	57.46"	-		T	
82.37	+/-0.030	82.37"	-		T	
Ø8.13	+0.012/-0.001	8.135"	-		V	
6.77	+/-0.030	6.77"	-		V	
5.72	+/-0.030	5.72"	-		V	
6.13	+/-0.030	6.13"	-		V	
2.21	+/-0.030	2.21"	-		V	
0.88	+/-0.030	0.88"	-		V	
7.78	+/-0.030	7.78"	-		V	
7.47	+/-0.030	7.47"	-		V	
Ø0.375	+0.006/-0.001	0.378"	-		V	
9.73	+/-0.030	9.73"	-		V	
21.00	+/-0.030	21.00"	-		T	
31.28	+/-0.030	31.28"	-		T	
4.00	+/-0.030	4.00"	-		V	
27.23	+/-0.030	27.23"	-		T	
22.28	+/-0.030	22.28"	-		T	
20.36	+/-0.030	20.36"	-		T	
0.093	+/-0.010	0.093"	-		V	

Measured by: Jm	Audited by: 15	Preliminary Approval:
Date: 13-1-16	Date: 13-1-16	Date:

Rev	Date	Change	Revised by	Approved
A	12.09.26	New Issue	KJ	

NCR: Yes / No

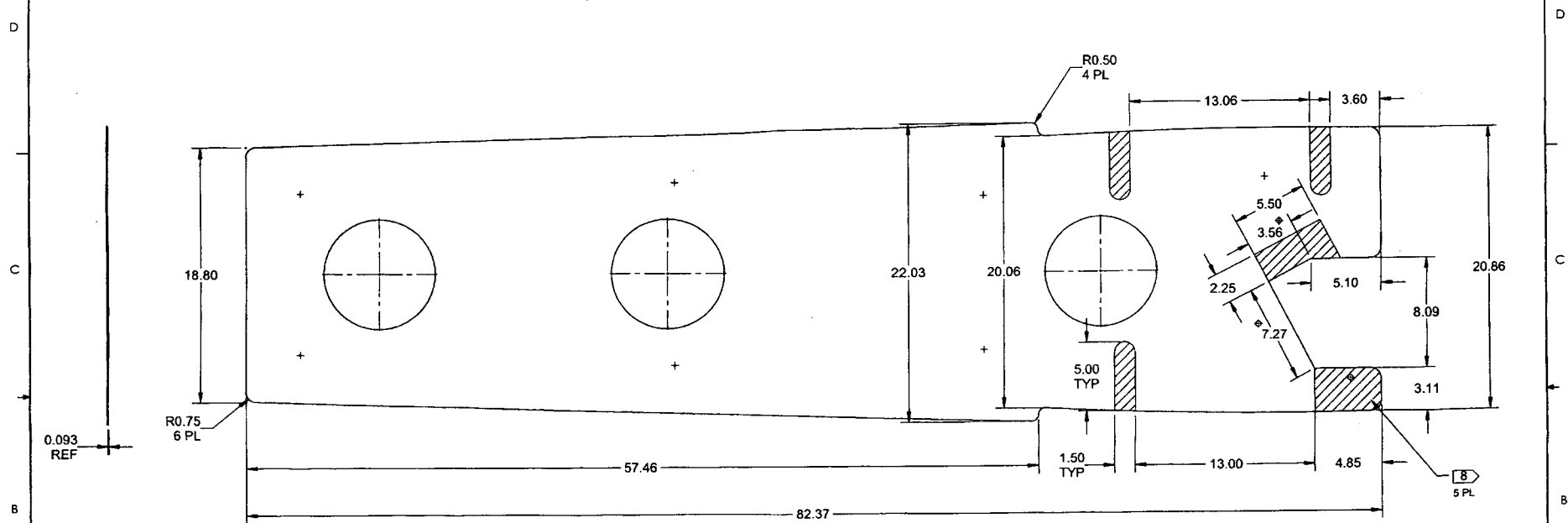
WORK ORDER NON-CONFORMANCE / UPDATE

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Work Order: _____ Part No. _____ NCR No. _____				DISPOSITION Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input type="checkbox"/> Work Order Update <input type="checkbox"/>		AGAINST DEPARTMENT/PROCESS <div style="display: flex; justify-content: space-between;"> <div> Skid-tube <input type="checkbox"/> Machining <input type="checkbox"/> Thermoforming <input type="checkbox"/> Large Fab <input type="checkbox"/> </div> <div> Crosstube <input type="checkbox"/> Small Fab <input type="checkbox"/> Finishing <input type="checkbox"/> Composite <input type="checkbox"/> </div> <div> Water Jet <input type="checkbox"/> Prod. Eng. Coord. <input type="checkbox"/> Rec/Store/Packaging <input type="checkbox"/> Supplier <input type="checkbox"/> </div> <div> Engineering <input type="checkbox"/> Quality <input type="checkbox"/> Other <input type="checkbox"/> </div> </div>					
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Operator <input type="checkbox"/>											
Material <input type="checkbox"/>											
Setup <input type="checkbox"/>											
Other <input type="checkbox"/>											
Process <input type="checkbox"/>											
Supplier <input type="checkbox"/>											
Training <input type="checkbox"/>											
Unapproved <input type="checkbox"/>											
FAULT CATEGORY											
Landing Gear <input type="checkbox"/> Bending <input type="checkbox"/> Centre Not Concentric to O/S <input type="checkbox"/> Cracks <input type="checkbox"/> Crushed/Crimped. <input type="checkbox"/> Cuffs <input type="checkbox"/> Heat Treat <input type="checkbox"/> Inspection Strip in Tube <input type="checkbox"/> Ripples in Bend <input type="checkbox"/> Torque Waves in Extrusion <input type="checkbox"/> Turning Sequence <input type="checkbox"/> Wave/Twist in Tube			General <input type="checkbox"/> Bend <input type="checkbox"/> BOM/Route <input type="checkbox"/> Broken/Damaged <input type="checkbox"/> Burrs <input type="checkbox"/> Contamination <input type="checkbox"/> Countersink <input type="checkbox"/> Cut Too Short <input type="checkbox"/> Drill Holes <input type="checkbox"/> Drawing <input type="checkbox"/> Finish <input type="checkbox"/> Folio			<input type="checkbox"/> Grain <input type="checkbox"/> Hardware <input type="checkbox"/> Inspection Incomplete <input type="checkbox"/> Instructions Incomplete/Unclear <input type="checkbox"/> Maintenance <input type="checkbox"/> Mislabeled <input type="checkbox"/> Misread <input type="checkbox"/> Offset <input type="checkbox"/> Out of Calibration <input type="checkbox"/> Out of Sequence <input type="checkbox"/> Outside Dimensions			<input type="checkbox"/> Ovalized <input type="checkbox"/> Over/Under tolerance <input type="checkbox"/> Part Incorrect <input type="checkbox"/> Part Lost/Missing <input type="checkbox"/> Part Moved <input type="checkbox"/> Positioned Wrong <input type="checkbox"/> Power Loss/Surge <input type="checkbox"/> Pressure/Forced <input type="checkbox"/> Temperature/Cure <input type="checkbox"/> Weld <input type="checkbox"/> Wrong Stock Pulled <input type="checkbox"/> Other		

8 7 6 5 4 3 2 1



D4640-15 CEILING PROTECTOR
TEXTURED SIDE SHOWN

RELEASED
2012-11-29

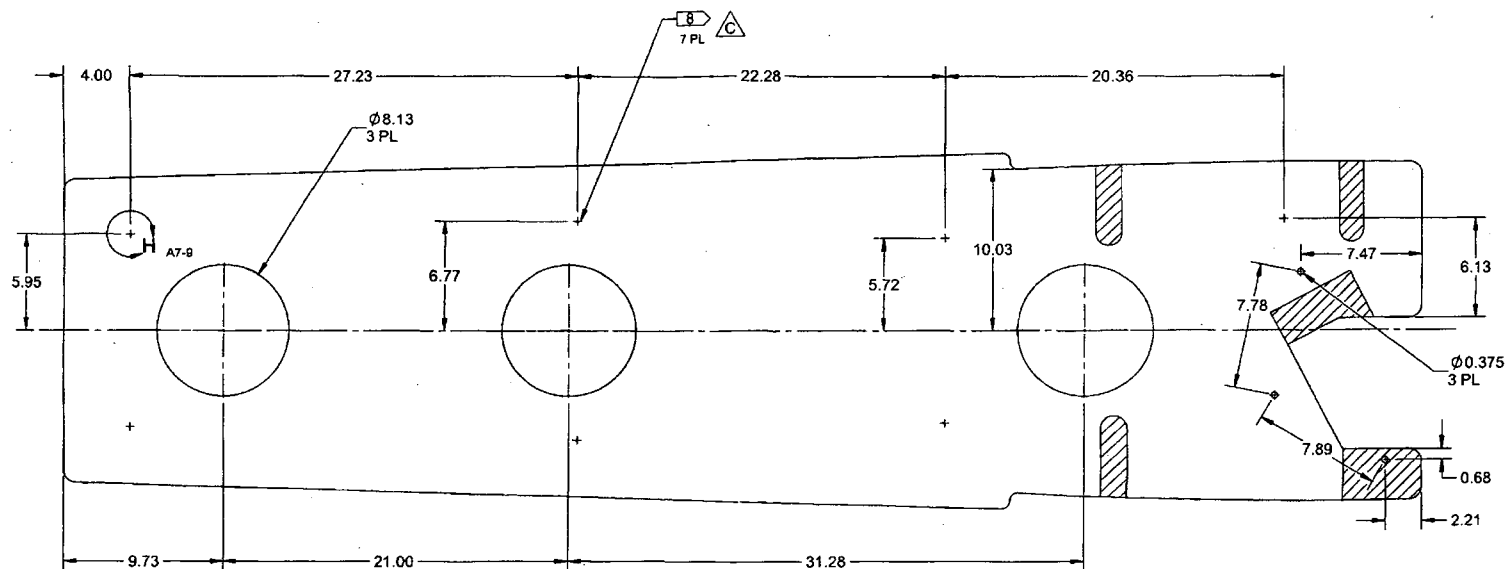
NOTES:

- 1) MATERIAL: F6006-GY5B133 GRAY LEXAN SHEET (SUEDE/POLISHED) 0.093 THICK
REF DART SPEC MLEXS.093-F6006-07
- 2) FINISH: N/A
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: IDENTIFY PER QSI 044 8.1 ON SMOOTH SIDE
- 7) WEIGHT: 5.99 lbs (TRIMMED WEIGHT = 5.78 lbs)
- 8) IF CUSTOMER REQUESTS "TRIMMED KIT" ON PURCHASE ORDER:
- DRAW 0.50" CROSS ON TEXTURED SIDE AT INDICATED LOCATIONS USING PERMANENT INK MARKER
- TRIM AND REMOVE SHADED AREAS

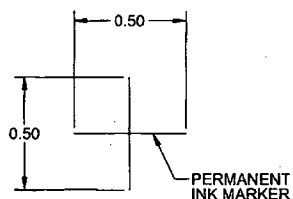
89524

DESIGN	XDF	DART AEROSPACE LTD	
DRAWN	GP	HAWKESBURY, ONTARIO, CANADA	
CHECKED		DRAWING NO.	REV. C
MFG. APPR.		D4640	SHEET 8 OF 9
APPROVED		TITLE	SCALE
DE APPR.		BAGGAGE PROTECTOR	NTS
DATE	12.11.22	COPYRIGHT © 2012 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

8 7 6 5 4 3 2 1



D4640-15 CEILING PROTECTOR
SUPPLEMENTAL VIEW



DETAIL H
NOT TO SCALE
TRIMMED KIT ONLY

C7-9
C

RELEASED
2012-11-29

DESIGN	XDF	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	97	DRAWING NO.	REV. C
CHECKED	1	D4640	SHEET 9 OF 9
MFG. APPR.	W	TITLE	SCALE
APPROVED		BAGGAGE PROTECTOR	NTS
DE APPR.		COPYRIGHT © 2012 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR REPRODUCED IN ANY FORM OR BY ANY MEANS WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	
DATE	12.11.22		

Chris Provencal

From: David Shepherd <dshepherd@dartaero.com>
Sent: Friday, January 18, 2013 1:29 AM
To: 'Chris Provencal'
Cc: 'Mike Petsche'; 'Eric Downing'; 'David Duval'; 'L Lacelle'
Subject: RE: NCR D4640-15

Chris,

I agree that the parts are acceptable.

David

From: Chris Provencal [<mailto:cprovencal@dartaero.com>]
Sent: January-17-13 2:47 PM
To: David Shepherd
Cc: Mike Petsche; 'Eric Downing'; David Duval; 'L Lacelle'
Subject: NCR D4640-15

David,

There was an issue noticed during production of the latest batch of (36) D4640-15 protectors. When checking the parts to the template, it was noticed that there is up to a 1/8" deviation from the template along 30" on one edge. The arc of the curve is slightly off along that length, ref the attached photo. I made the decision as outlined below, and am sending this as an FYI in case you have any issues.

I've accepted the parts based on the fact that:

- Considering the function of the part, the 1/8" deviation is in line with what would be reasonable
- It has no effect on the function of the part
- Cosmetically I don't believe it will be noticeable when installed
- I am 99% sure that this is what Bell initially received and they raised no issue

The problem is in the waterjet program, which shows the deviation when overlayed with the template program. I verified that the DXFs are correct and there was no change to the program since the rev. B dwgs (currently rev. C). The problem must have been in the translation of the DXF's spline by the software. I have recreated the geometry without the spline and will provide production with an updated DXF that should have no issues.

I am wondering if this could be an issue for other files, when translating from Solidworks-> AutoCAD dxf -> Waterjet program.

-Chris